ISM 50 - Business Information Systems

Lecture 7

Guest Instructor: Geoff Ryder
Instructor: John Musacchio
UC Santa Cruz
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Class Announcements

- Business Paper Proposal Due Tuesday!

Class Announcements

- Project proposals due in 5 days (Tuesday)!
  - 2-3 pages
  - Give a plan what you will cover in report
  - Cite some references, and show that you have started your research!
    - Remember references must be cited in the body of the text with footnotes or end notes.
  - See website for more details.

Having trouble researching your paper?

- Log in to the university library web site and get expensive, professional research for free through our institutional subscriptions.
  - You can find references from a search engine first, then get access to the full article behind the publisher firewall through the library.
  - Privately held companies may be tough to investigate. One option is Business Week: http://investing.businessweek.com

Student Presentation (1)

Josh Dodson, News Article
Terms to Know—ERP, Cisco,...

- ERP
- MRP
- CIO
- functional organization
- IT
- LOB
- UNIX
- TCP/IP
- CRM
- CRP
- ROR
- ROI
- Digital (DEC)
- GL, Chart of Accounts
- HHC
- RFP
- KPMG
- SAP

Applications

- What is an application?
  - Computer software that performs useful capabilities for a user, organization, incorporating storage, manipulation, and communication of information.

- An organizational application
  - Supports an organization

- Often called enterprise application
  - (An enterprise is an organization with a commercial mission)

Types of organizational applications

- **Departmental**
  - Supports a single functional department
  - Example: An accounts management application for an accounting department.

- **Enterprise**
  - Supports enterprise-wide processes and goals.
  - Example: coordinate information between functional departments involved in fulfilling an order.

  (or other cross functional process.)

Business IS Application Taxonomy (O'Brien)

Some Types of Organizational Applications

- **Worker Collaboration**
  - Example: video conferencing

- **Operations and Logistics**
  - Example: coordinate movements of goods between sites.

- **Decision Support**
  - Summarize info for execs.

- **Knowledge Management**
  - Organize and retrieve knowledge in company’s documents and databases

Examples

- **Software Merchant**
  - **Customer Relationship Management (CRM)**
    - Maintain a case file of customer questions and complaints.
    - Website of Freq. Asked Ques. And documentation.
    - Chat application for customers to communicate with tech-support personnel.
SAP CRM Application

Examples

On-Line Stock Trading
- Information Management application for paying customers
- Specialized software to interface with
  - customers
  - stock exchange
  - Customer's bank

Some more terms

Transaction Processing Systems record and process data from business transactions.

Batch Processing - transactions are accumulated over a period of time and processed periodically.

In Online Transaction Processing (OLTP), transactions are processed immediately.

Some More Terms

- A workflow application supports ongoing repetitive tasks.
  - Example: An application that passes a case summary of a customer from customer service to tech support.

Definitions: Net Present Value

- Finding the value of an IT Project
  - http://www.soe.ucsc.edu/classes/ism050/Fall09/Cash_Flow.pdf

  - Insight: $1 tomorrow is worth less than $1 today!
  - Say the interest rate \( i = 10\% \) per year
  - The discount factor \( d = 1 / (1+i) = 1/1.1 = 0.91 \)
  - Now suppose we have a stream of payments
    - \( X_0, X_1, X_2, X_3, \ldots \)
  - Then the net present value \( NPV \) of this stream of payments is computed as
    \[
    NPV = X_0 + d\times X_1 + (d^2)\times X_2 + (d^3)\times X_3 + \ldots
    \]

New SAP Installation: Organizational Learning Curve for Fraction of Orders Shipped Late

New SAP Installation: Organizational Learning Curve for Lead Times

So what exactly is ERP??

The precursor to ERP, MRP

- MRP (Material or Manufacturing Resource Planning)
  - Take:
    - Product Demand forecasts
    - Inventory Balances
    - Replenishment Lead Times
  - Develop a Production schedule for a single plant
  - At this Point, it is a planning tool

Later on More capabilities added

- Order Processing
- Product Costing
  - The planning tool begins to take more and more of an active roll in the business processes.

A desire to Link Across Functional Departments of firm

- Each functional department had its own legacy application
  - Programmed in different languages
  - Different Data formats
- Often some data was shared between departments by duplicating it.

MRP evolves into ERP

- A common software architecture with modules to support different business functions.
  - Accounting, finance, sales, HRM, material management, etc...
- Key features:
  - Multi-functional
  - Integrated
  - Modular
ERP

- How would you design an ERP?
- Design a user interface for each module
  - Ask user to fill in certain "fields" at particular times.
  - Set up a sequence of events
    - When the sales department enters an order, that event triggers an event at the manufacturing department.
- But by doing this, aren't we presuming a particular business process?

Fundamental options

- Customize the application to existing organization?
- Mold organization to off-the-shelf application?
  - Is software a good way to propagate best practices?

Proponent of disseminating best practices through MRP

- We were not going to allow a lot of customization, either. There is a tendency in MRP systems for people to want to the system to mirror their method of operation, instead of retraining them to do things they way the system intended them.
- Paul Redfield, SVP Manufacturing
Cisco Case Study, p. 3 (119)

Contrary view: opponent of disseminating best practices through ERP

- One point that I found interesting was that SAP now supports more than 25 industry specific best practices-based road maps. SAP is working toward cross pollinating industry best practices, which in theory might sound good, but when it comes to best practices, history kind of bears out the idea that one company’s best practices might be the reason for collapse of another company – so cross pollination of industry-wide best practices might lead to nothing more than a bunch of bee stings rather than honey. So to speak.
- Paul Greenberg, ZDNet
May 13, 2009

Break

Quiz

1) What does ERP stand for?

2) Cisco decided to get ERP software that was developed by
   a) IBM       b) Oracle
   c) Microsoft d) SAP

3) Cisco makes
   a) Routers      b) Desktop computers
   c) Cell phones  d) Restaurant supplies
Student Presentation (2)

Melanie Alvarez, Cisco Case

Break into groups of 3 or 4

- Discuss
  - A) Was the project successful? Why or why not?
  - B) Imagine you were asked to lead an ERP deployment at another company,
    1) What ideas would you borrow from Cisco's ERP project?
    2) What factors worked in Cisco's favor that might not apply to other companies trying to do an ERP project?
    3) What mistakes would you avoid that Cisco made?
- Write your ideas down.

Cisco Summary

Success Factors
- Cross-Functional Team of top people
  - People from across the company involved
- Hungry Vendors
  - Oracle and KPMG needed this to succeed
- Strong Support from Top Management
- Favorable Hardware Contract
- Rapid Prototyping
- Aggressive pace
- Good management or luck?

Cisco Summary

Challenges
- Poor testing Strategy
- Inadequate Hardware
- Software required more modifications than originally hoped.

Cisco Summary

What did it cost?

Costs Beyond original budget:
- Non-IT Personnel In Project
  - 80 personnel X 8 months X 160 hours / month X 100 hour = $10 million
- IT-Personnel beyond original 20
  - 80 personnel X 4.5 months X 160 hours / month X 100 hour = $5.7 million
- Actually cost more than 15 million more than the original budget of $15 million!
- Was this really a success?!
Cisco Overview

- 65,000 employees, worldwide
- Revenue about $32B this year
- Known for router and switch products
- Now moving into "adjacent markets" with services, communications, data center, and even consumer products
- 133 Acquisitions

Routers

- Cisco's first product, originally designed to bridge networks from different vendors
- Now almost all networks run TCP/IP, so router's function has changed:
  - Core internet routing
  - Gateway to internet in enterprise networks
  - Device IP address assigned by network administrator
  - Can route between devices with different physical interface types
  - Can support networks with billions of end points

Switches

- Steer traffic within a closed network
- Larger networks have thousands of endpoints
- Devices identified by MAC address, assigned by device manufacturer
- Devices typically have the same physical interface type
- Networks relatively easy to set up and administer

Routers versus Switches

- Switches steer traffic based on endpoint devices' fixed address
  - Non-scalable mechanism, like sending letters without a zip code
- Routers steer traffic based on devices' assigned "geographic" network address
  - Logical address groupings, like ucs.edu and att.net
  - Hierarchical network groupings allow distributed routing
- Routers can send traffic between devices with different physical interface types
- Summary: Switching is fast and simple, but not as scalable as routing

Cisco's "Market Adjacencies"

- Strategy: Use existing customer relationships and core competencies to move into different markets
- Usually timed with a "market disruption"
- Recent examples:
  - IP Telephony
  - Telepresence
  - Webex conferencing
  - Data center

IP Telephony

- Strategy: Use IP networking expertise to enter the enterprise IP telephony market
- Disruption: evolution from TDM to packet-based voice
- Acquire and internally develop the call manager, phones, and voice gateways
- Triggers upgrade cycle of higher capability switches and routers
- Over 7 million phones sold
Telepresence

- Reinvention of video conferencing
  - Conference room metaphor
  - “It’s all about the experience.”
- Disruptions: Dis-incentives to business travel
  - 9/11, SARS, Fuel Costs, Economic problems
- Triggers both customer and service provider equipment upgrades

Conferencing: Webex, and “Software as a Service”

- Unified conferencing: voice, video, document sharing, and other “collaboration tools”
- Platform for partners to develop and distribute applications, such as call center and customer support

Data Center: Virtualization and Cloud Computing

- “The next big thing.”
- Single network to integrate servers, storage, and network connections
- Scalable “computing on demand”
- Migration to virtual machines reduces hardware costs, administration costs, and power consumption

Porter’s Five Forces, Cisco 3750

- Supplier Power: Suppliers are both partners and competitors. Broadcom and Marvell
- Competitors: Cisco, HP, 3Com, Nortel
- Buyer Power: Many customers & few suppliers
- Substitute: Lower cost unmanaged switches, commodity copies of older generation products
- Rivalry: Attract (Microsoft, Intel, GE) Feature requirement

Observations on Cisco ERP Case

- Self imposed urgency
  - RFP written in ten days!
- Customers drove features
- Specified no change in existing processes
  - Attempt to make new system function like old system
- Heavy use of Oracle consultants despite desire for no customization
- Extreme control over suppliers: marquis account
- IT as a strategic advantage
  - Investment versus cost